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ABSTRACT

A procedure used to select students for a nursing program in a community college was evaluated, and attention was directed to the cost effectiveness of the program and the implications for the community of an open-door policy. The selection criteria were based on high school grades in chemistry and biology; scores on the Aptitude Test for Allied Health Programs; and a locally developed noncognitive instrument, the Interest and Background Survey. Assuming students scoring below the established composite score of 200 would have been denied admission to the program, this selective admission procedure would have denied 33 students an opportunity to become nurses, and would have deprived the community of the services of these 33 nurses. The cost per graduate and per licensed nurse for students who met the selective admission criteria and for those who did not qualify was calculated based on faculty contact hours. It cost half as much to produce a qualified nurse when educating a student who met the selective admission criteria as it did when working with those who did not. The conflict that arises from a policy of providing open access to programs while state governments are not providing adequate funding for public postsecondary education is noted. (SW)

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EVALUATION OF OPEN ACCESS VERSUS SELECTED ADMISSION TO THE NURSING PROGRAM IN A COMMUNITY COLLEGE

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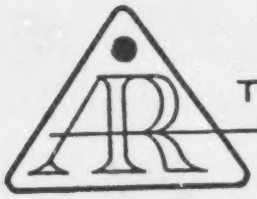

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Background

Unlike Europe, where access to higher education is seen as a privilege to be granted only to those who can profit by it or who can afford it, the United States has been wedded to the notion of mass higher education for a long time. As early as in 1849, Free Academy, which later became the City College of New York, was established to try the experiment "whether the highest education can be given to the masses; whether the children of the whole people can be educated." Alba and Lavin (1982).

With the growth of junior and community colleges in U.S.A., it became an essential part of their mission to open up the doors of higher education to the masses. With low or no tuition and with relatively unrestricted admission policies, the two-year colleges were able to attract students who would not have normally gone to college otherwise. The very success of the open door policy which resulted in the mushrooming growth of the two-year colleges in U.S.A. has raised questions about the usefulness of open admissions as a public policy. There are charges that it has resulted in lowering of academic standards and that it is wasteful of public resources. This was the dominant theme when as a

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result of the New York City's fiscal crisis in 1976, the City University of New York dramatically reduced its commitment to open admissions by abolishing free tuition and by reducing the entering class from 40,000 to about 29,000 within a year. "The assault on open admissions as undermining academic standards emerged from the premise that not all students are 'college material.' That premise was widely enough shared so that the direction of change in response to the fiscal crisis was in favor of selectivity." Alba, etal (1982)

As basic skills testing of freshmen entering colleges has spread, it has become evident that as a result of open admissions, two-year colleges have been enrolling a large number of students who do not have the requisite levels of verbal and/or mathematical skills to allow them to cope successfully with their college-level work. More and more of these students are being asked to take precollege remedial courses. For example, in New Jersey, which has a mandatory testing policy for all students entering public institutions of higher education, 41% of the students entering community colleges in Fall 1982 were found in need of remediation in writing, 33% in writing, 43% in math computation and 36% in elementary algebra.[1] In follow-up studies of remedial students it has been found that unless they are successfully remediated, most of these students do not complete their programs of studies in college.

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(Last) two years of recession, a general disenchantment with higher education and the perception that college enrollments have entered a constrictive phase, there is an increasing tendency among State governments to either freeze appropriations for higher education or to allow only minimal

increases. The squeeze on budgets have forced colleges to reconsider their priorities and commitments, and cost-effectiveness of programs and policies has become an important consideration. "Even in the best of times no society has unlimited resources for the support of schools and colleges, and, if prudent, will spend its limited funds so that they promise the greatest social benefits." Ebel (1982)

Open admissions policy is clearly under attack. "It is not particularly fair to some applicants to give them 'opportunities' they are unable to use. Nor is it in the interest of society to dilute the productivity of its educational institutions, or to scale down the quality of its educational programs by admitting poorly qualified students in the interest of 'fairness' to them." Ebel (1982)

In fact, there are not many colleges, not even two-year colleges, which follow a true open-door admissions policy in the sense that every program in the college is open to adults irrespective of their level of academic preparation. Even when unrestricted admission to college is allowed, students are required to satisfy certain prerequisites or selection criteria to enroll in specified programs. The need for a selection procedure becomes all the more necessary when the number of applicants to a program is much larger than the number who can be accommodated. This is more so in case of programs which make use of expensive lab or clinical space as in the case of a Nursing program. "High attrition poses a distinct problem for limited capacity programs such as Nursing. Many of these limited capacity programs have substantially more applicants than available positions. Thus, the place occupied by a

student unable or unwilling to complete the program is necessarily denied to other applicants, possibly an applicant more likely to succeed. In addition, this attrition represents a large scale wastage of both human and economic resources. The need to identify selection procedures capable of filtering out potential failures and identifying potential successes is therefore a critical one." Weinstein, Brown and Wahlstrom (1979)

Purpose of the Paper

The purpose of this paper is to review and discuss the results of a selection procedure used to select students for a Nursing program in a community college, and draw appropriate conclusions in regard to the cost-effectiveness of the program and implications for the community and for the open-door policy.

Methodology

This study is based on students who entered the Nursing program in Fall 1977 and 1978. During these two years students were admitted to the program on the basis of a selection criterion developed and validated using the data on the students entering the program in 1976. The selection criterion was based on high school grades in Chemistry and Biology, scores on the Aptitude Test for Allied Health programs[2] (ATAHP), and a locally developed noncognitive instrument called Interest and Background Survey (IBS). The ATAHP consisted of five subtests on Verbal, Numeric, Science, Reading and Arithematic skills.

The IBS aims to measure students' familiarity with the Nursing profession, students' empathy for the poor and the disadvantaged, their person-orientation, their planning and organizing capabilities, and their work habits. The questions for the IBS were developed and their content validity established with the help of the Nursing faculty.

The three sets of measures were combined after converting them to z scores and giving them appropriate weights to produce a scaled Composite score.

The Composite score was used to rank all the applicants to the program and to admit them in the order of their rank. However, for lack of sufficient outcome data to validate a cut-off score, no minimum level on the Composite score was used to deny admission to any applicant. In practice, this meant that in order to fill the available seats most of the applicants who took the trouble of taking the ATAHP and the IBS tests and who had at least a 'C' grade in Chemistry and Biology were admitted to the program. This became necessary as the requirement that the applicants must take the necessary tests to be considered for admission, significantly reduced the number of applicants as the result of a self-selection process. The net result of the selection process was not so much in denying admission to unprepared students but in providing the necessary data on the basis of which the selection criterion could be properly validated and a level on the criterion necessary for success in the program could be identified. Setting and using this minimum level as the desirable qualifying criterion, implications of admitting or not admitting students below this qualifying criterion are examined below in terms of productivity and cost-effectiveness of the program.

Results

The intercorrelations between the Composite score and its components are presented in Table 1. Reflecting the weights used, the Composite is more strongly related to the ATAHP scores than to either high school grades or the IBS.

Table 2 presents the relationships between the different levels of the Composite score and some key outcome criteria. As can be seen in this table, the Composite score is strongly related to the outcome variables, and in fact, a Composite score of 200 could be profitably used to select students and improve the outcomes of the program. Assuming that students scoring 200 or below on the Composite were denied admission to the program, the implications of such an action are discussed below in terms of its effect on the cost and outcomes of the program, its impact on the community and on the students. In the following discussion, students scoring more than 200 on the Composite are designated as 'qualified' while those with a Composite score below 201 are called 'unqualified.'

Your qualified and unqualified groups overlap for a score of 201 – excuse me – they just appear to overlap – there must be an easier way to say this ... a clearer, more concise way.

If a Composite score of 201 and above were used to select students for the Nursing program, 129 out of 304 students would have been denied admission to the program. This would have reduced the number of net graduates by 45, and there would have been 33 less licensed nurses available to serve the community (Table 2). Thus the selective admission would have denied 33 students an opportunity to become qualified nurses, and would have deprived the community of the services of these 33 nurses.

TABLE 1

INTERCORRELATION BETWEEN THE COMPOSITE SCORE AND ITS COMPONENT MEASURES

		Composite
1.	High School Biology Grade	.38
2.	High School Chemistry Grade	.31
3.	ATAHP - Verbal	.78
4.	ATAHP - Numerical	.54
5.	ATAHP - Science	.79
6.	ATAHP - Reading	.67
7.	ATAHP - Arithmetic	.59
8.	ATAHP - Total	.87
9.	IBS	.34

TABLE 2

COMPARATIVE PERFORMANCE OF STUDENTS WITH DIFFERENT COMPOSITE SCORES

		COMPOSITE SCORES			
		Less than 201	201-205	206-210	Over 210
1.	No. of students	129	79	60	36
2.	% of total number of students	42.4	26.0	19.7	11.8
3.	% with less than 2.0 GPA in first semester	50.4	21.8	17.2	2.8
4.	% with less than 70% of cumulative credits completed	50.3	17.7	15.0	8.3
5.	% with grade of 'C' or worse in Nursing I course	75.0	50.0	36.1	5.8
6.	Graduates				
	No.	45	53	43	27
	%	34.8	67.0	71.6	75.0
7.	Licensed				
	No.	33	45	35	23
	%	25.6	57.0	58.3	63.9

On the other hand, while the graduation rate for the 'qualified' students would be 70.3%, the 'unqualified' students would have graduated at the rate of 34.8%. Similarly, the licensing rate for the 'qualified' students would be 58.9% against a rate of 25.6% for the 'unqualified' students. This has clear implications for the cost of producing a graduate or a licensed nurse from amongst the two groups of students.

Table 3 presents the data on the calculation of cost per graduate and per licensed nurse for the 'qualified' and 'unqualified' students. The way this data was obtained is explained below.

Costing Methodology

As in most Nursing and Science courses the number of faculty contact hours used to produce the specified course credits are always larger than the course credits, and as the program budget is spent largely on paying the faculty contact hours, it was decided to use the faculty contact hours instead of student credit hours as the costing units. In arriving at the cost data, the following steps were taken:

(1) The courses that Nursing students have to take in each of the four semesters were identified. As Nursing is a highly structured program, this was not difficult. Even though some of the non-Nursing courses in English, Social Science or Science are taken by some of the students prior to their first semester in Nursing, for the purposes of cost calculations it was assumed that the courses were taken by all the students in the semesters prescribed by the program.

TABLE 3

CALCULATION OF COST PER GRADUATE AND PER LICENSED NURSE FROM AMONGST THE UNQUALIFIED AND QUALIFIED STUDENTS

	Unqualified Students		Qualified Students	
	No. of Students	Faculty Contact Hrs. Used	No. of Students	Faculty Contact Hrs. Used
1. 1st Semester	129	147	175	197
2. 2nd Semester	97	175	153	277
3. 3rd Semester	79	160	145	292
4. 4th Semester	69	133	135	259
5. 5th Semester	38	71	16	30
6. 6th Semester	26	47	22	40
Total faculty contact hrs. used		733		1,095
Number of Graduates	45		123	
Contact hours per graduate		16.3		8.9
No. Licensed	33		103	
Count hours per licensed nurse		22.2		10.6
Direct cost per contact hour	$ 1,020			
Cost per graduate	$16,626		$ 9,078	
Cost per licensed nurse	$22,644		$10,812	

(2) The number of faculty contact hours used by the type of instruction e.g., lecture, lab or clinic, and the size of sections in each of the instructional mode were identified.

(3) The numbers of students in the original cohort of the 'qualified' and 'unqualified' students enrolled in the program in each of the six semesters (two additional semesters were allowed to round up the students who did not complete the program in four semesters) were obtained.

(4) The enrolled students in each of the semesters were divided by section sizes to obtain the needed sections by instructional modes. The sections were then multiplied by the used faculty hours to obtain the total number of faculty hours needed to provide the necessary instruction. The rest of the calculations are shown in Table 3.

It is obvious from Table 3 that it cost more than ~~double~~ Twice as much ($22,644 against $10,812) to produce a qualified nurse from amongst the 'unqualified' students as it did to produce a nurse from the 'qualified' students. This difference is based only on the direct cost. If indirect costs are added, the cost would increase proportionately. However, the cost of producing a nurse from amongst the 'qualified' students would increase less (given the lower base) than the cost of a nurse from amongst the 'unqualified' students, which would further widen the gap between the two costs. On the other hand, it may be argued that as the fixed portion of the direct cost (related to items such as chairperson, lab assistant, secretary, equipment, etc.) and a large proportion

of the indirect costs are going to be incurred in any case to service the 'qualified' students, they should not be charged to 'unqualified' students. This would lessen the cost of producing a nurse from amongst the 'unqualified' students but only to a small extent.

Discussion

It is clear from the findings of this study that it is significantly more expensive to obtain the desirable outcomes from students who do not possess the requisite skills than from those who do. If cost-effectiveness and cost-cutting were the major considerations, this would obviously point to the desirability of selective admissions, at least in the expensive programs such as Nursing. For example, had the 129 'unqualified' students not been admitted to the Nursing program, there would have been a savings of about 733 contact hours, which equate to about 24 full-time faculty positions. Using $22,000 (including benefits) as the average salary of junior faculty, this amounts to a savings of $528,000. But, it should be remembered that this saving is spread over three years, and that 129 students represent 'unqualified' students from two entering classes.

In these times of fiscal constraints, it would be tempting to any college management to reduce the entering class and cut the program budget. However, it should also be realized that such an action would deny an opportunity to 129 students to try to pursue an educational career of their choice, and what is more important, it would deny an opportunity to 33 successful students from becoming nurses. As for denying the community the services of these 33 nurses, the College

could, if it so desired, make efforts to recruit about 63 more 'qualified' students (instead of admitting 129 'unqualified' students) to make up the loss of 33 nurses.

In the last resort, the whole issue of open versus restricted access to a program of higher education boils down to the justification of additional costs for giving opportunities to lesser prepared students to pursue education of their choice. The lesser the preparation of students, the more costly it will be to serve their educational needs. As lack of academic preparation is often associated with the disadvantaged background both in terms of ethnicity and socioeconomic level, the issue becomes enmeshed with the question of allowing or denying higher education opportunities to students from disadvantaged backgrounds. Colleges to some extent, but the State governments to a larger extent would have to decide how much they are ready to spend in allowing the educational opportunities to students with less than adequate academic preparation. It would be wrong for State governments to insist that community colleges should continue to provide open access to their programs while State governments deny them adequate funding, as is happening in New Jersey.

NOTE

[1]From an unpublished report of the New Jersey Basic Skills Council.

[2]Psychological Corporation in New York. The test is now called Allied Health Aptitude Test.

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